



5...4...3...2...1...

SPACE LAUNCH SYSTEM

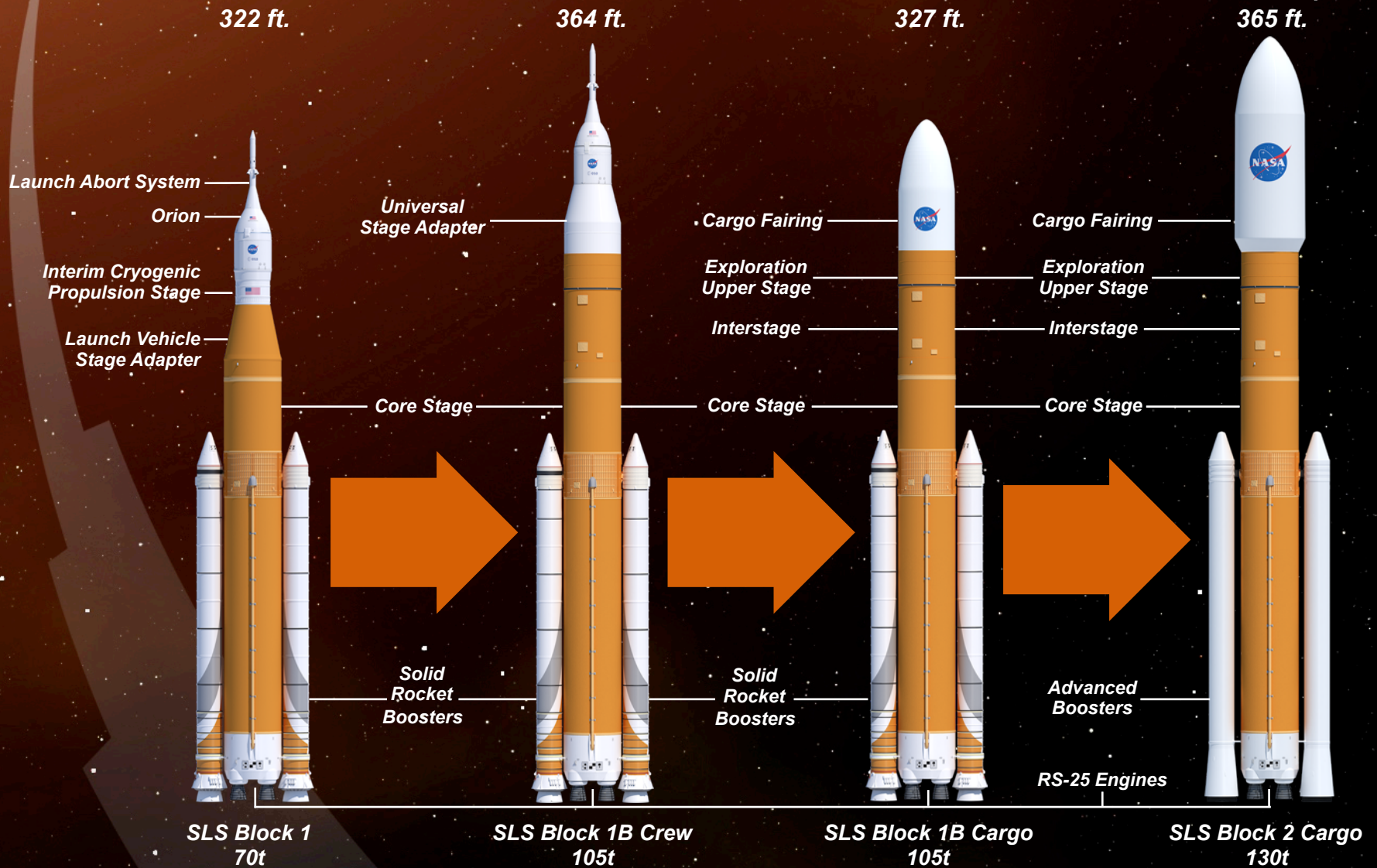
AN EVOLVING CAPABILITY FOR SPACE EXPLORATION

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SLS Evolution



SOLID ROCKET BOOSTERS

OVERVIEW

- World's most powerful solid boosters for flight
- Two Space Shuttle-heritage solid rocket boosters
- Upgraded via fifth propellant segment to 3.6 million pounds of thrust capability, and with new avionics and insulation

STATUS

- Second Qualification Motor test completed in June 2016
- Flight hardware in inventory at Kennedy Space Center; processing underway at Orbital ATK in Utah



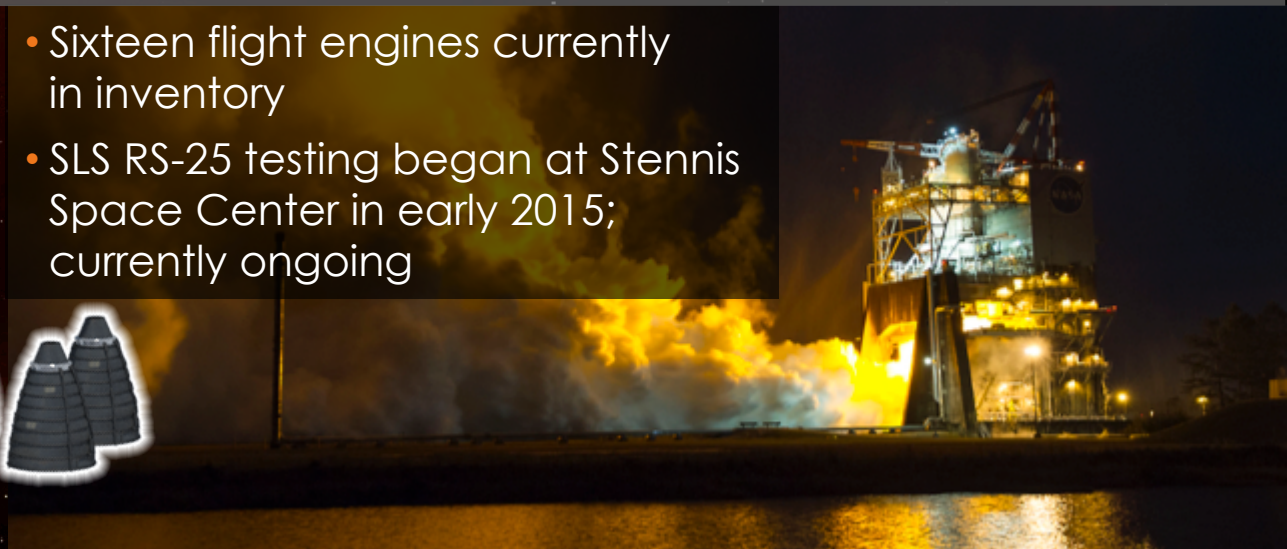
RS-25 CORE STAGE ENGINES

OVERVIEW

- World's most powerful, efficient and reliable liquid rocket engine
- Four Space Shuttle-heritage RS-25s
- Upgraded with new controller; engines certified at 512,000 pounds of thrust each

STATUS

- Sixteen flight engines currently in inventory
- SLS RS-25 testing began at Stennis Space Center in early 2015; currently ongoing



CORE STAGE

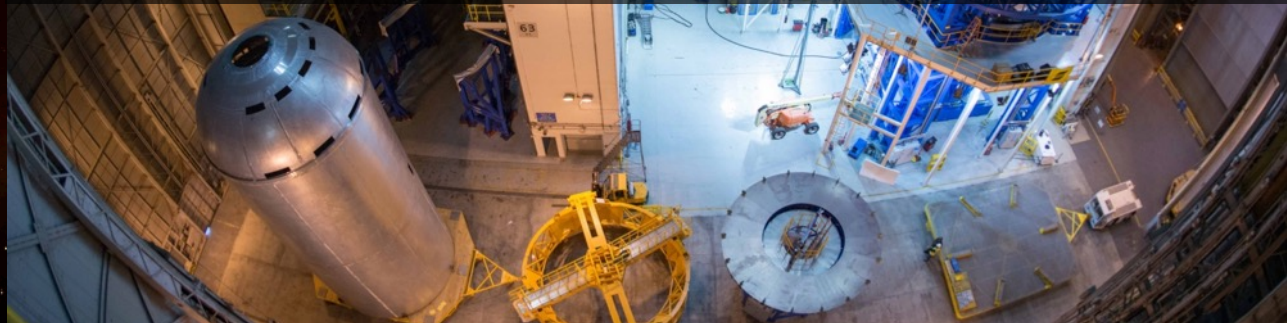
OVERVIEW

- World's largest rocket stage
- 27.6-foot diameter; 200 feet tall
- Being built at Michoud Assembly Facility outside New Orleans, LA



STATUS

- Welding is underway currently on test and flight articles for core stage fuel tanks
- Refurbishment underway on B-2 stand at Stennis for Green Run core stage test



UPPER STAGE AND ADAPTERS

OVERVIEW

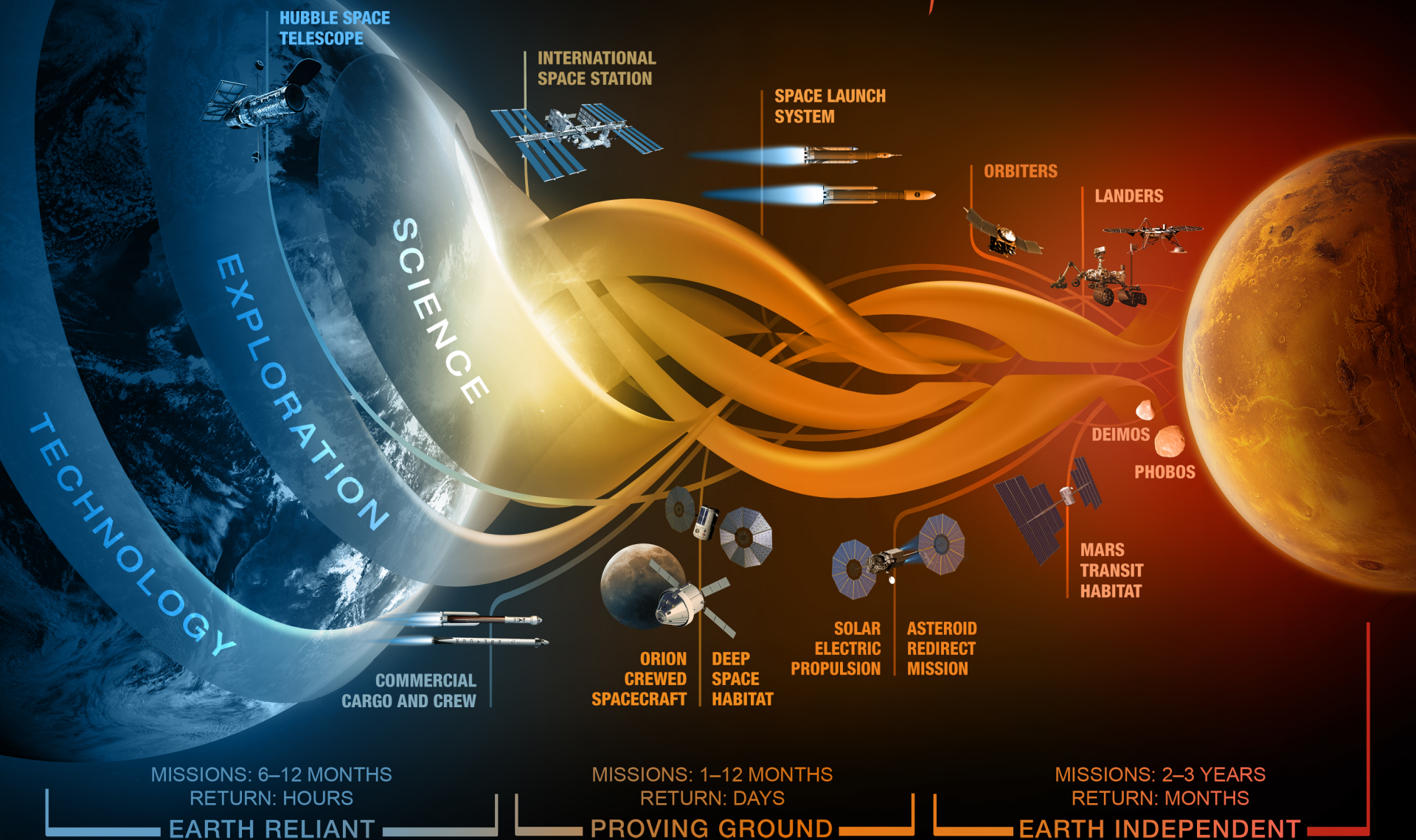
- Interim Cryogenic Propulsion Stage is derived from proven second stage of Delta IV Heavy
- Launch Vehicle Stage Adapter and Orion Stage Adapter mate ICPS to core stage and Orion, respectively

STATUS

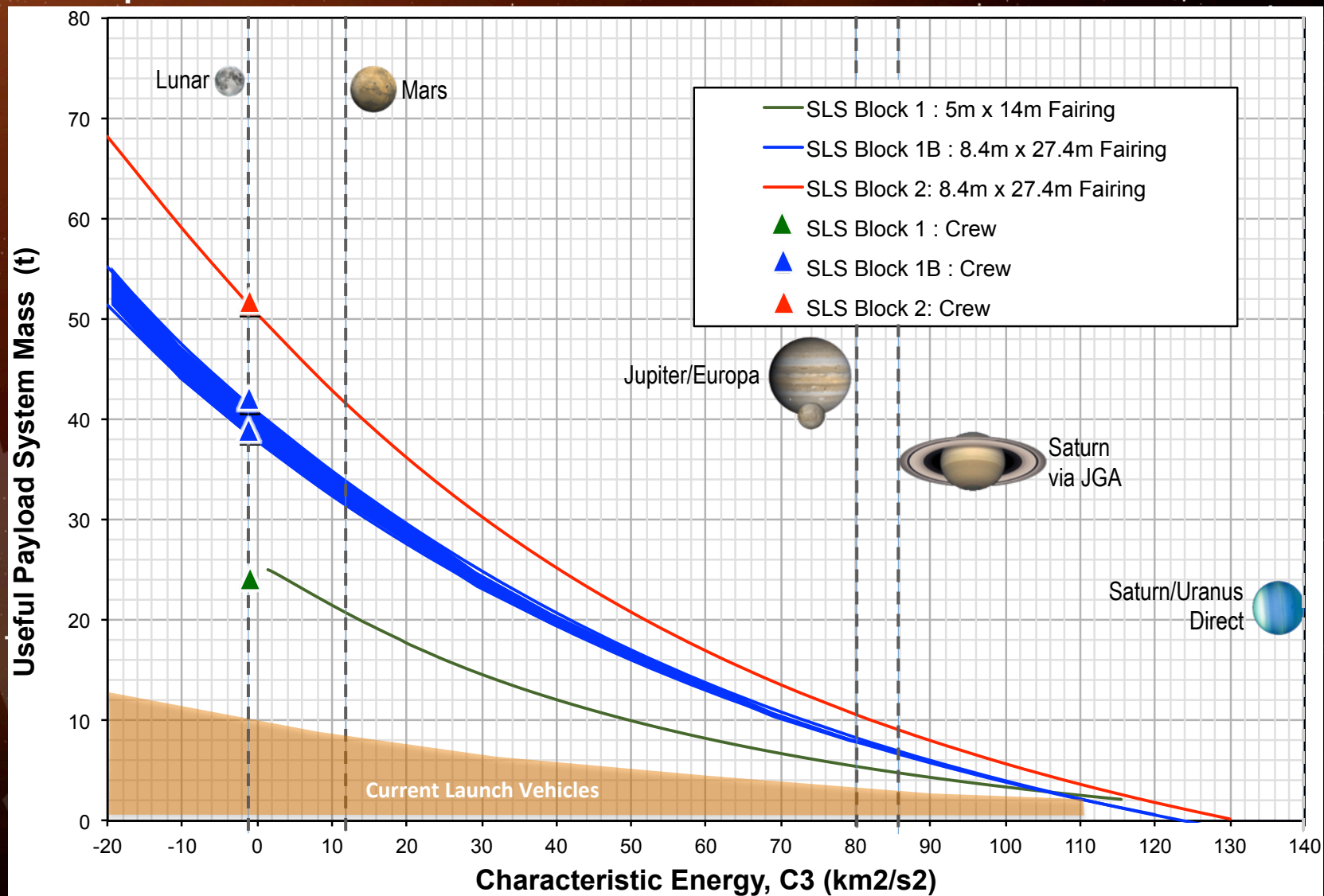


- Orion Stage Adapter became first original SLS hardware to fly on Exploration Flight Test-1 in December 2014
- Flight in manufacture currently; test articles will begin stacking for loads testing in late 2016

JOURNEY TO MARS



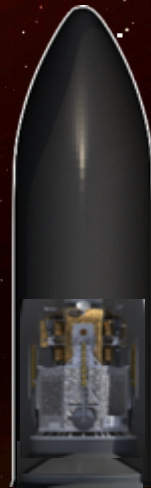
SLS PAYLOAD MISSION CAPTURE



SLS PAYLOAD ACCOMMODATIONS

FAIRING AVAILABILITY

- Potential opportunities exist for launch of a 5m fairing on the Block 1 configuration of SLS
- Block 1B configuration offers opportunity for co-manifested payloads with Orion spacecraft or near-term 8.4-meter lower-height accommodations
- Co-manifested Payload accommodations early as soon as second flight of SLS; 8.4- and 10-meter fairings available in the mid- and late-2020s, respectively



5m fairing w/ science payload



Science Missions



Orion with short-duration hab module



8m fairing with large aperture telescope



10m fairing w/notional Mars payload

total mission volume = ~

250m³

400m³

400m³

1,200m³

1,800m³

ONE LAUNCH, MULTIPLE DISCIPLINES

Along with Orion, the first SLS launch will carry 13 6U smallsats, representing multiple disciplines and partners. The smallsats will be deployed from the Orion Stage Adapter.

MOON

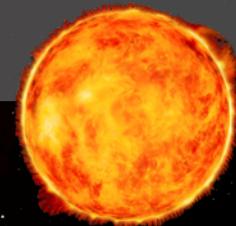
- Lunar Flashlight (NASA)
- Lunar IceCube (Morehead State University)
- LunaH-Map (Arizona State University)
- Omotenashi (JAXA)

ASTEROID

- NEA Scout (NASA)

SUN

- CuSP (Southwest Research Institute)



EARTH

- EQUULEUS (JAXA)
- Skyfire (Lockheed Martin)



AND BEYOND

- Biosentinel (NASA)
- ArgoMoon (ESA/ASI)
- Three Centennial Challenge Winners (TBD)



THE ADVENTURE BEGINS NOW.



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